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The De Havilland Hornet

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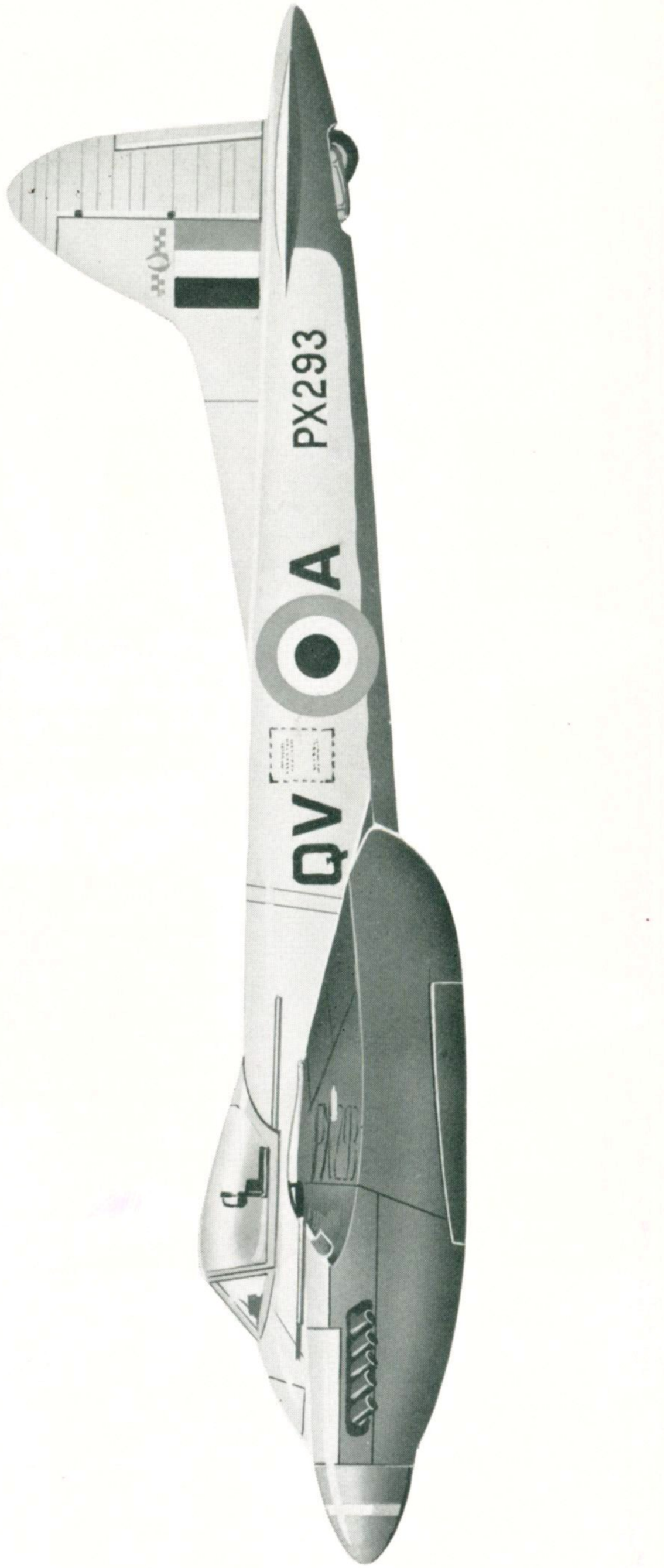
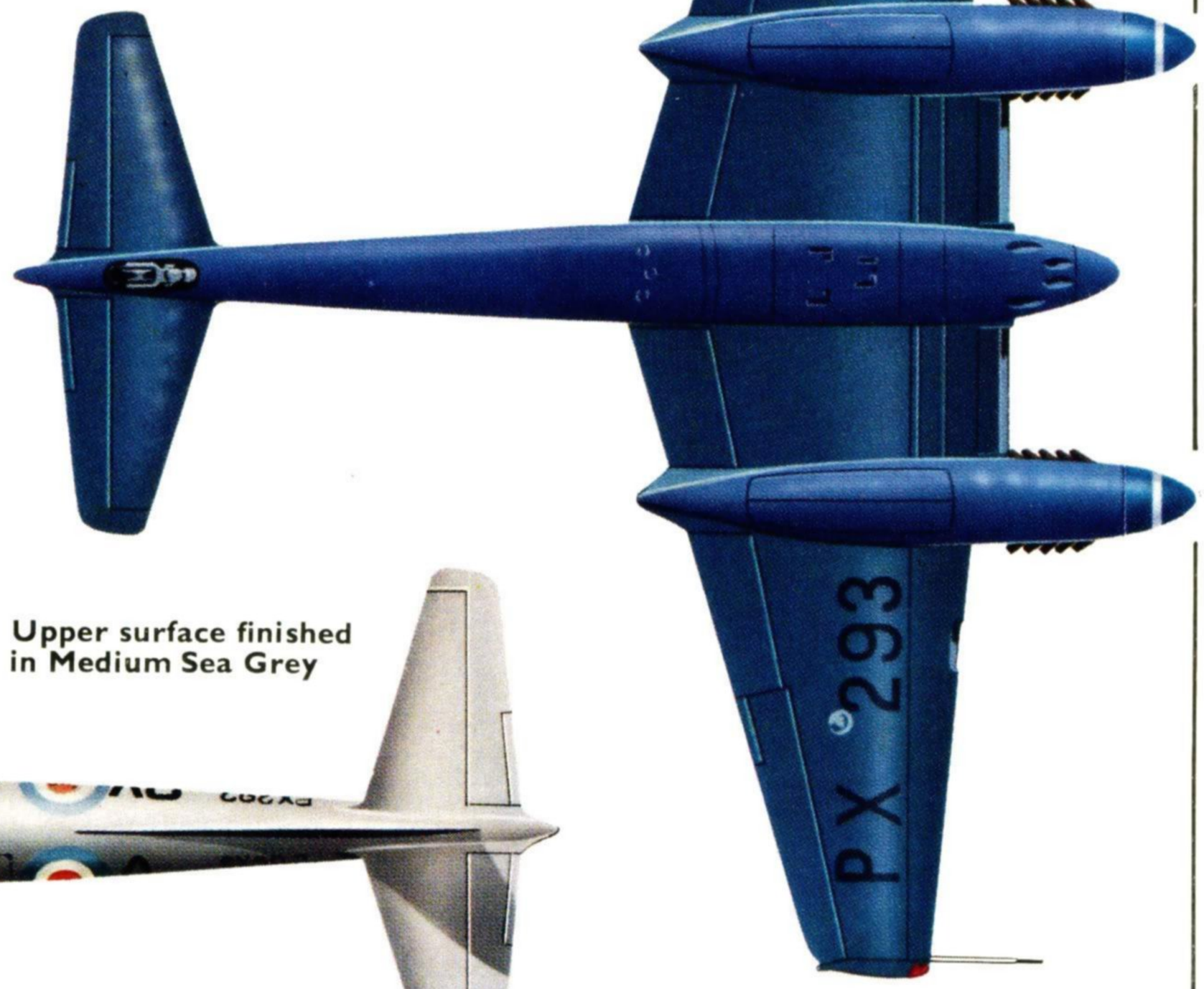
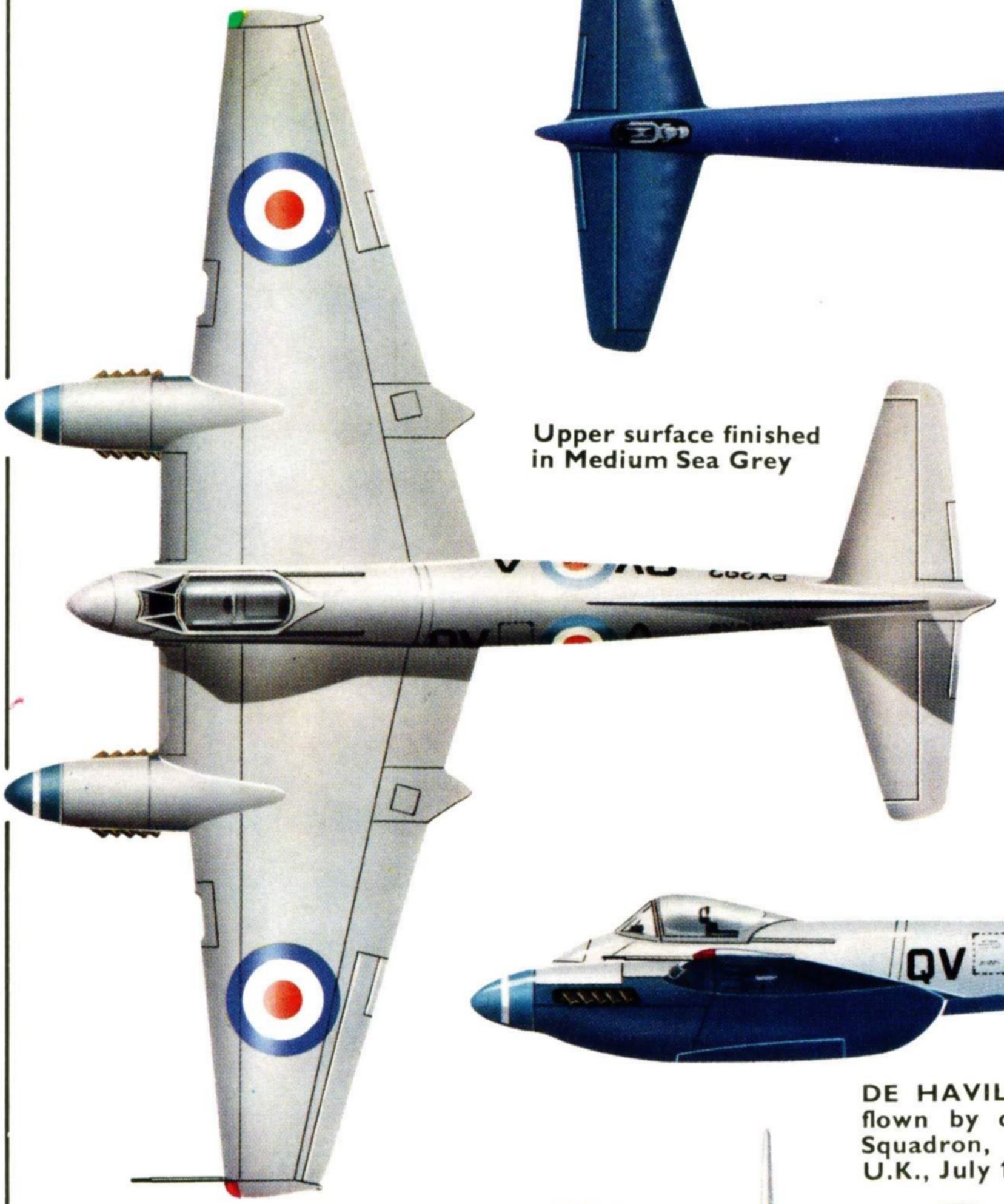
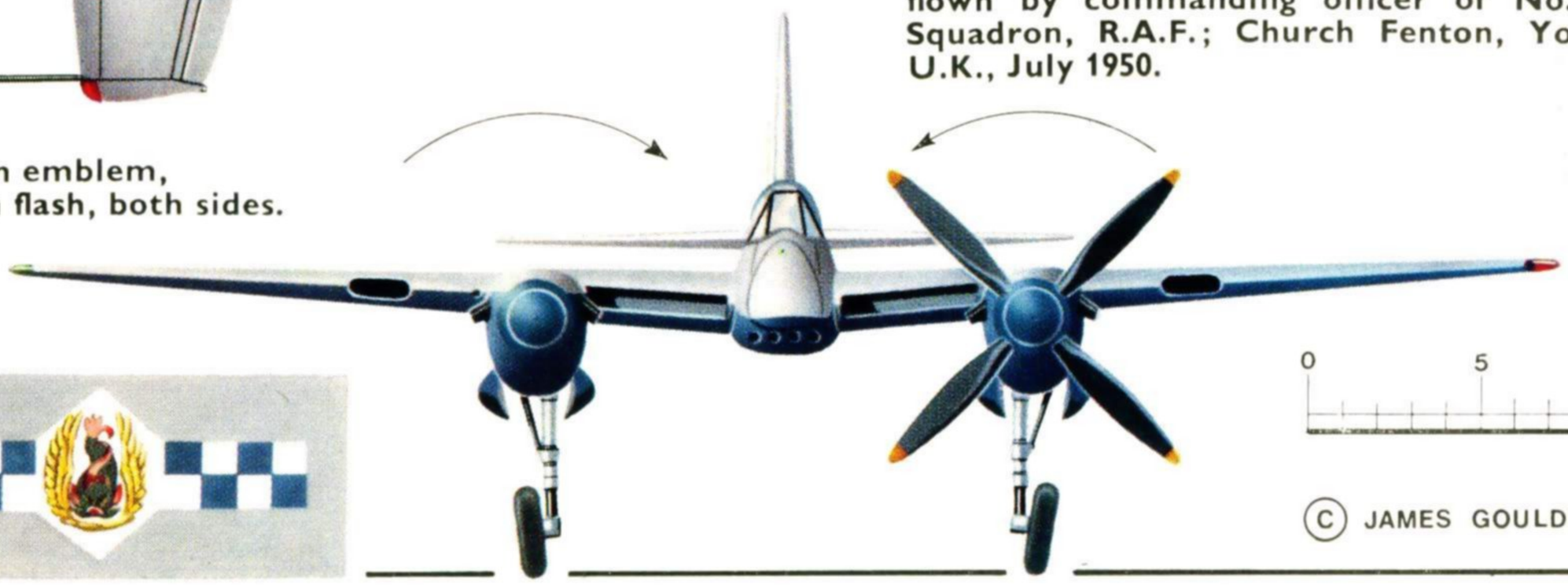






Upper surface finished in Medium Sea Grey

DE HAVILLAND HORNET F. Mk. 1, *PX293*, flown by commanding officer of No. 19 (F) Squadron, R.A.F.; Church Fenton, Yorkshire, U.K., July 1950.



Squadron emblem, above fin flash, both sides.

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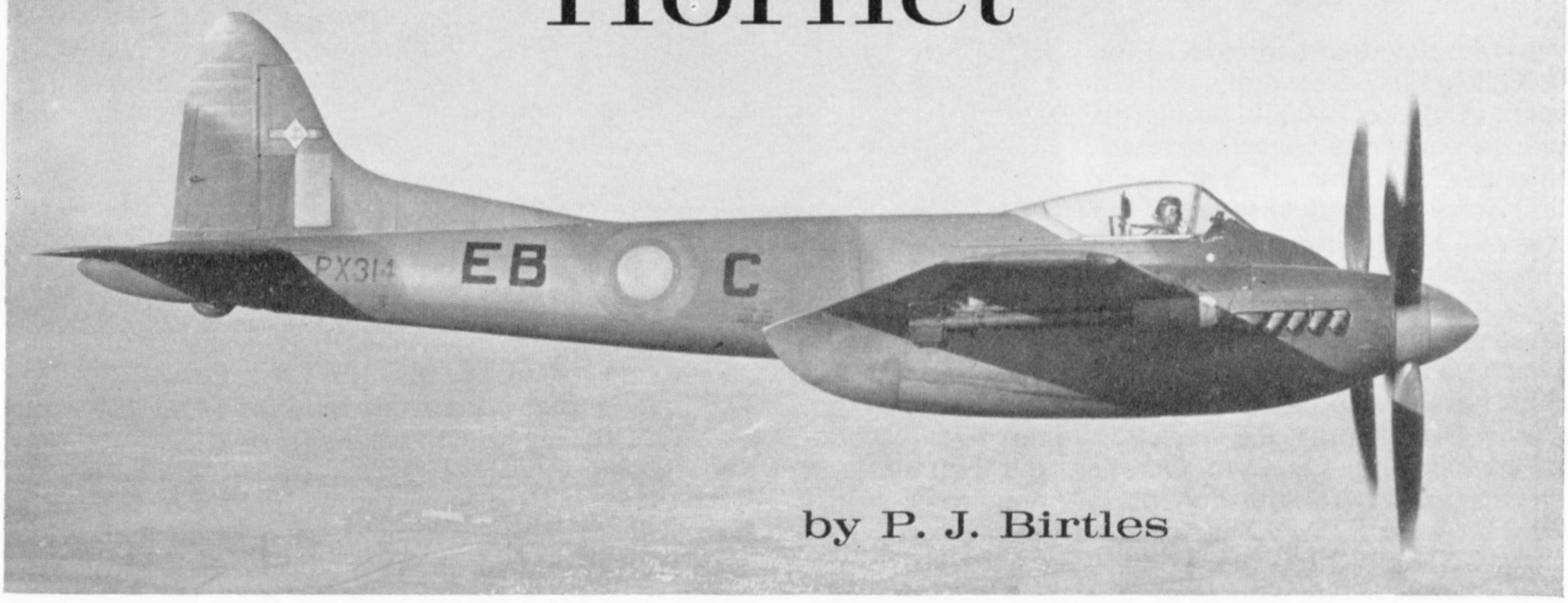
The De Havilland Hornet



by P. J. Birtles

Hornet F.3, PX314 *of No. 41 Squadron in camouflage finish. Note squadron marking on fin and underwing rockets.*
(Photo: Temple Press Ltd.)

Although the D.H. 103 Hornet had been designed, developed and put into production a few months before the collapse of the enemy in World War II, it did not enter service until the hostilities ceased. The aircraft represented the ultimate in piston engined fighter design and was well liked by the pilots who flew it.

In the autumn of 1941, with Mosquito production well under way, there was available within the de Havilland organization, spare design capacity for new work, but it was still rather early to start on the Vampire as the prototype engine was yet to be built. There appeared to be a need for a high-speed, unarmed, twin-Sabre engined night bomber, which was proposed in October 1941 as the D.H. 101. This was abandoned when it was realised that the Napier Sabre engines would not be available and was replaced by a lower powered design, type D.H. 102, with Rolls-Royce Griffon or Merlin engines. This was a rather less attractive proposition as it was slower than the Mosquito.

By November 1942 it was decided to drop this night bomber project and concentrate on making the best use of the Rolls-Royce Merlins by building a long-range fighter, which became classified as the D.H. 103. This was basically a scaled down, single seat version of the highly successful Mosquito, designed to deal with the single-engined Japanese fighters in the Pacific war. This aircraft had to be capable of very long range flights to be of any use, and to attain the necessary performance, had to be perfectly streamlined. Rolls-Royce were keen to use their new, especially developed Merlin engines of low frontal area, and the project appeared ideally suited to these powerplants.

By January 1943, the mock-up was completed at Hatfield and was the only project using these extremely sleek power-plants. The mock-up was shown to the Ministry of Aircraft Production at this time, but due to their other very heavy commitments, permission to build was not received until June 1943 when the Specification F.12/43 was written round it and the project ceased to be a private venture.

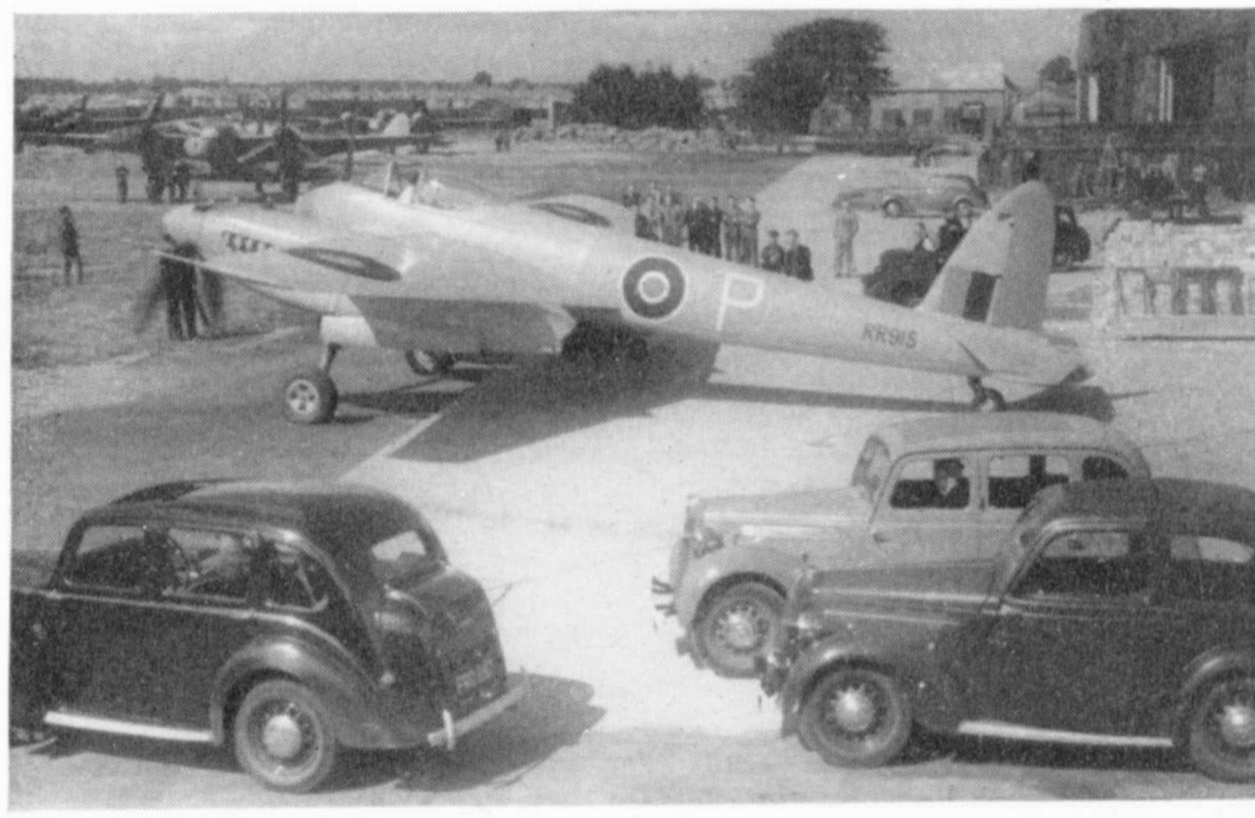
INTO PRODUCTION

The shape of the D.H. 103 resembled, generally, the Mosquito, but in fact it was an entirely new design using the manufacturing experience of the Mosquito. The first fuselage shell was in the assembly jigs at Hatfield by January 1944 and the first prototype, serial *RR915*, was rolled out for engine runs on 20th July that year. The first flight was made by Geoffrey de Havilland, Jnr. on 28th July, this being only thirteen months after permission had been given to start the detail design on the Hornet, as the aircraft had now been named.

Its highly developed engines, beautifully cowled, produced no less than 2,070 h.p. each, take-off power. The extremely efficient de Havilland four-blade propellers, rotating in opposite directions on the production aircraft, gave the Hornet a higher performance than any other propeller driven aircraft. It was capable of climbing at over 4,500 ft./min., reaching 485 m.p.h. in level flight, having an operational ceiling of about 35,000 ft. and a range, with drop tanks, in excess of 2,500 miles. Its main armament was four 20 mm. cannons, supplemented on later marks by rockets and bombs.

In the first sixty days of test flying, shared by Geoffrey de Havilland and Geoffrey Pike, over fifty hours were flown. The second prototype, *RR919*,

The first prototype RR915 *taxiing out for the maiden flight on 28th July, 1944.* (Photo: Hawker Siddeley Aviation)



Second prototype RR919 *shown with underwing bombs at Hatfield; November 1944.*
(Photo: Hawker Siddeley Aviation)

was completed with provision for two 200-gallon drop tanks and the carriage of two 1,000 lb. bombs on pylons under the wings. Production of the Hornet F. Mk. 1 was laid down at Hatfield towards the end of 1944 against orders for the Royal Air Force, the first one of sixty aircraft, *PX210*, being delivered to A. & A.E.E., Boscombe Down on 28th February 1945. However, before sufficient numbers could be produced for service with the Far East Air Force, the war with Japan had reached its conclusion. On 29th October, the Hornet was shown publicly for the first time, the example being *PX237* at the R.A.E. Farnborough Open Day.

As well as being produced as a fighter, the Hornet was intended to be used as an unarmed photographic reconnaissance aircraft, this version being designated the P.R. Mk. 2. Three F. Mk. 1's, *PX216*, *PX220* and *PX249* were converted as prototypes of the P.R. Mk. 2, fitted with four cameras mounted under the fuselage. A production order for five hundred mixed P.R. Mk. 2's and F.1's commencing with *VA962* was placed, but was cancelled after the first five were built, and these were eventually scrapped.

The next Hornet version was another fighter with all round improvements on the Mk. 1. This was the F. Mk. 3, the prototype being *PX312*, although the production batch commenced *PX289*. The main differences were that the Mk. 3 was fitted with a wider tailplane, larger elevator horn balances, a dorsal fin, later fitted to the Mk. 1's and the provision for the 200-gallon drop tanks and 1,000 lb. bombs as tried out on the second prototype. Internal tankage was increased from 360 to 432 gallons to give the Hornet a 20% increase in range. The F. Mk. 3 was first shown to the public at Farnborough in June 1946, the example being *PX366*, and it remained in production until June 1952. Production ceased at Hatfield when the jigs were moved to Chester at the end of 1948. The first Chester-built Hornet, *WB873*, flew in March 1949 and production continued there until a total of two hundred and eleven aircraft had been delivered to the R.A.F.

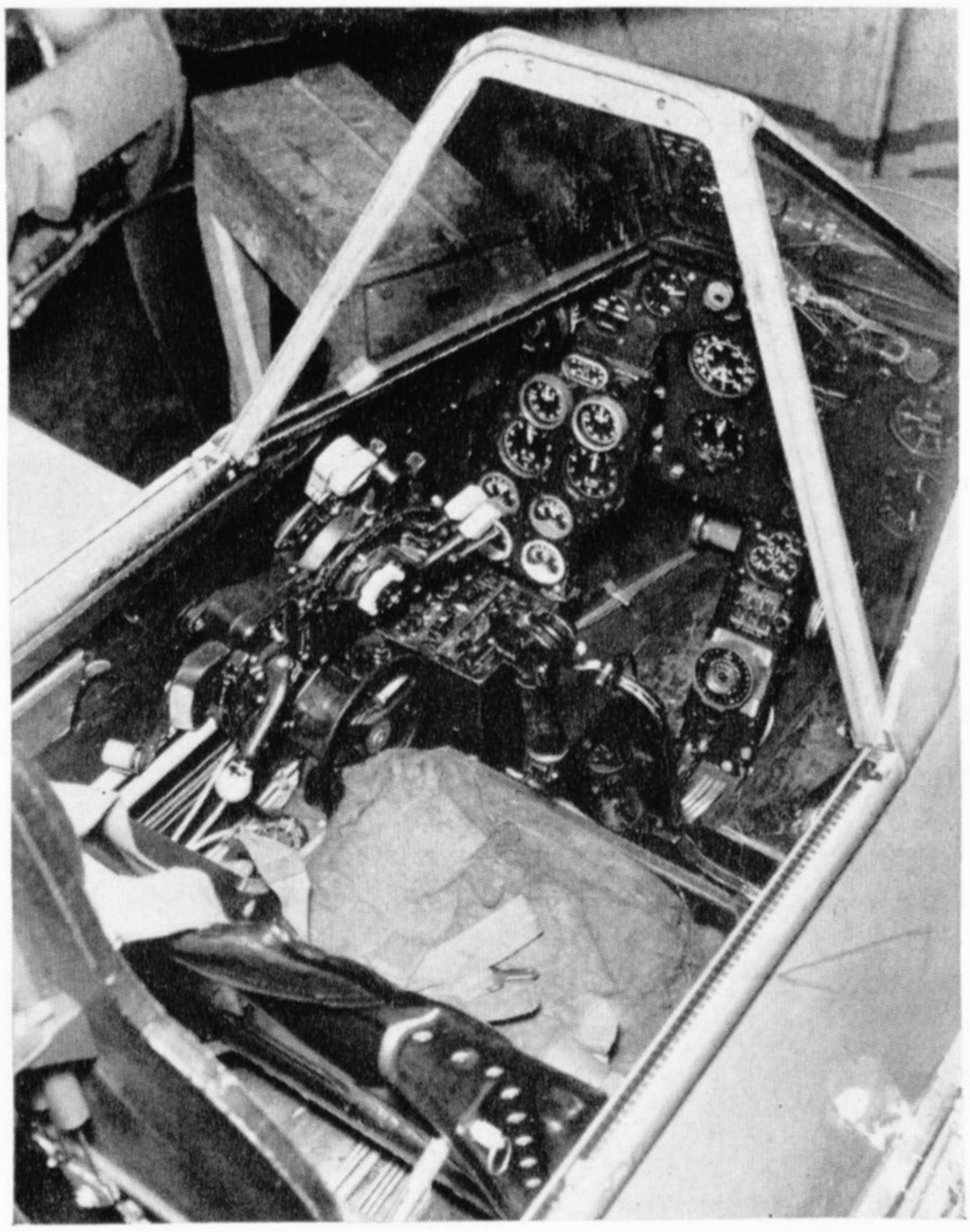
The attractively slim installation of the Merlin engine in the Hornet. (Photo: Hawker Siddeley Aviation)

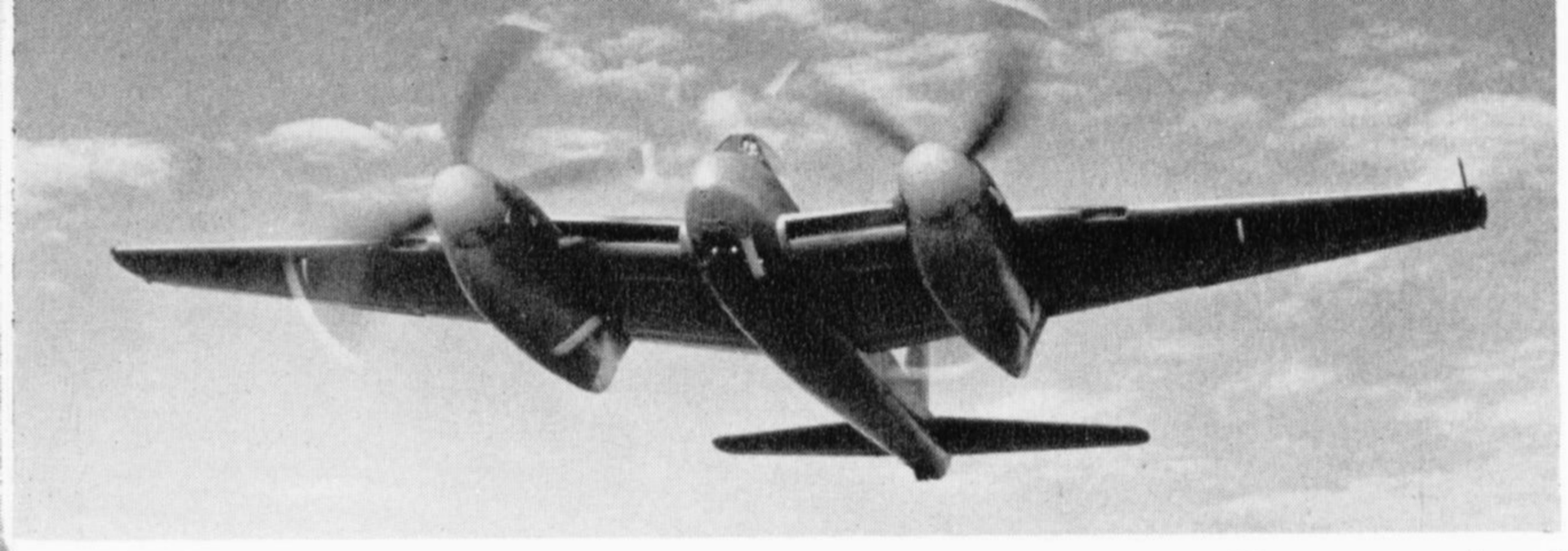
THE HORNET IN THE R.A.F.

The first Hornet Squadron was No. 64 at Horsham St. Faith, equipped with ten F.1's, nine of which took part in the Victory Fly Past over London on 8th June 1946. F.1's also served with No. 226 O.C.U. at Molesworth, Bentwaters and later, Stradishall. The next Hornet Squadron was No. 19 formed at Wittering with F.1's during October 1946, followed later by Nos. 41 and 65 Squadrons at Church Fenton.

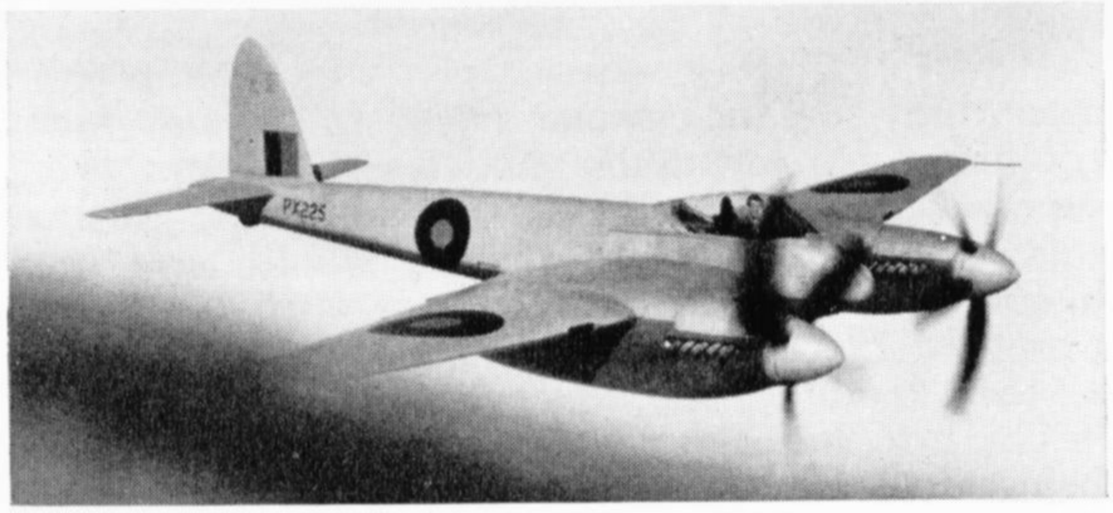
No. 65 Squadron, by then based at Linton-on-Ouse, was chosen to pay an official visit to the Swedish Air Force during May 1948. On 15th September 1949, one of two Hornets participating in the Battle of Britain celebrations at Gibraltar was flown out from Bovingdon by Flt./Lt. Peebles at an average speed of 357·565 m.p.h. to establish a British point to point record. On the return on 19th September, a new record of 435·823 m.p.h. was set up by Gp. Capt. Carver when flying under strict cruise control at the tropopause. Only fifteen minutes fuel remained in his tanks on landing at Bovingdon after a flight of 2 hours, 31 minutes and 36 seconds.

Hornet cockpit, showing engine controls and instruments.
(Photo: Hawker Siddeley Aviation)





Forward view of Hornet PX225 *demonstrates the slim lines, details of the armament, and the excellent visibility from the cockpit.*
(Photo: Temple Press Ltd.)



Hornet F. Mk. 1 PX225 *in early grey and P.R. blue colour scheme; this aircraft was issued to No. 65 Squadron. In the cockpit, well-known De Havilland production pilot Pat Fillingham.* (Photo: Temple Press Ltd.)

As a sporting aircraft, the Hornet performed with mixed success. Geoffrey Pike flew Hornet F. Mk. 1 *PX224* into third place in the Lympne High Speed Handicap race on 31st August 1946, at an average speed of 343·5 m.p.h. On 30th July 1949, a new F. Mk. 1 *PX286* (race number 84), powered by 2,030 h.p. Merlin 133/134 engines, took part in the National Air Races at Elmdon. Flown by R. W. Jamieson and entered by W. E. Nixon, a de Havilland director, it was unplaced in the Kemsley Challenge Trophy Race, but when flown by Geoffrey Pike as Mr. F. T. Hearle's entry in the Air League Challenge Cup, it was placed second and clocked the fastest lap at 369 m.p.h.

One flight in *PX383* on 25th February 1949 was doomed to fail from the start. It was being flown by Geoffrey Pike on a test flight concerned with the carriage of 200-gallon drop tanks. Just after take-off, with perhaps one of the heaviest loads carried by a Hornet, the starboard engine cut. With such a heavy load, it was not safe to land again on one engine, so it was decided to head for the North Sea and jettison the drop tanks. Unfortunately, the starboard tank refused to go, although the port tank dropped off without any trouble. This of course made the Hornet very nearly uncontrollable, the aircraft flying starboard wing down despite full aileron. The Hornet was then flown inland and a decision made to abandon over open country. This was accomplished, not without a little struggle, and the aircraft continued down into an unfortunate lady's back garden at Barkway, Hertfordshire. The pilot meanwhile landed safely by parachute nearby.

THE HORNET IN THE FAR EAST

In 1951, the Hornets were withdrawn from Fighter Command and many were sent to Nos. 33, 45 and 80 Squadrons of the Far East Air Force who had previously been battling against the Terrorists with Spitfires and Beaufighters. The Hornet's long range capabilities were put to full use, its operation being complementary to the Lincoln medium bomber. The majority of the Malayan sorties were in support of ground Security Forces, and the targets were jungle areas suspected of harbouring the terrorists. No. 45 Squadron flew the Hornet for five years in Singapore having previously been equipped with Beaufighters and Brigands. They made 4,500 air strikes against terrorists hiding in the jungle, the most made by any one Squadron in the F.E.A.F. The difficult terrain and changeable Malayan weather hampered target identification and there were times when their endurance was stretched to its limits while standing off targets for as much as two hours. The state of readiness of this particular Squadron was well illustrated when a gang of terrorists was located by ground forces in Central Johore and air support was called for. Within 22 minutes, the Hornets were over the target. The Squadron also provided numerous aerial escorts to road and river convoys, some of which were taking children to school, and they were involved in supplying air support when the notorious terrorist leader—The Bearded Terror—was killed by the 1st Battalion Suffolk Regiment. The Hornets

Hornet F. Mk. 3 PX393 *of No. 64 Squadron in silver finish and late-style national markings. Individual letter on nose, unit emblem on base of fin and underwing rocket rails are all apparent, as is contra-rotation of the airscrews. The aircraft was based at Boscombe Down from July 1949 until February 1951.* (Photo: Hawker Siddeley Aviation)

A Hornet F. Mk. 3, WB912 *of No. 45 Squadron at Tengah airfield, Singapore, being readied for a strike against the Malayan terrorists.* (Photo: J. Vigar)

were especially equipped for these tasks with underwing rails for eight rocket projectiles, or racks for two 1,000 lb. bombs and the last three, *PX293*, *PX291* and *PX299* were despatched from 10 M.U., Hullavington in mid 1954. These Hornets were the last piston engined R.A.F. fighters to see active service and the last were withdrawn from use in the first half of 1956, to be replaced by Vampires.

The last twelve production Hornets were fitted with one F.52 vertically mounted camera and were designated the F. Mk. 4. The only other change from the F. Mk. 3 was to replace the 60-gallon top fuel tank with a smaller one holding 46 gallons, to make room for the camera.

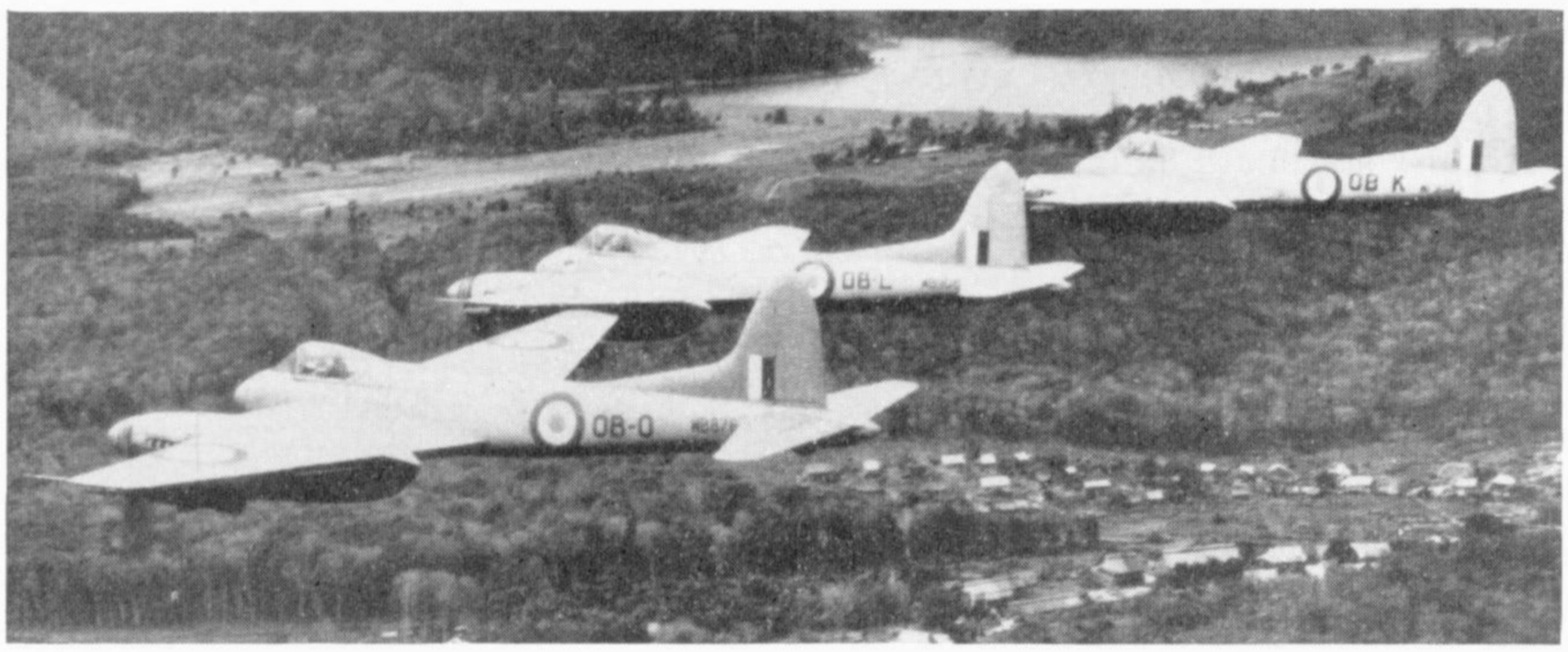
THE SEA HORNET IS BORN

In the early stages of the design of the Hornet, it was realised that the project might easily be adapted for use aboard aircraft carriers against the Japanese. This was the reason that the Merlin 130 and 131 engines, the latter in the port nacelle, drove the propellers in opposite directions, to obtain improved take-off and landing characteristics. High drag flaps were installed to give the necessary power on approach. Towards the end of 1944, specification N.5/44 was issued, and three early production Hornet F.1's, *PX212*, *PX214* and *PX219* were selected to fulfil this requirement. The design and conversion was undertaken by the Heston Aircraft Company, who produced a new Lockheed hydraulically powered folding wing, similar to the installation on the Sea Mosquito, a forged steel flush-fitting V-frame arrester hook, tail down catapult pick-up points, and mountings for the special naval radar and radio equipment. Airdraulic undercarriage legs were supplied by de Havillands to replace the existing rubber compression units, which would have been unable to absorb the very high rate of descent experienced in deck landings. The weight penalty of all these modifications only totalled 550 lbs.

The first two aircraft were only partly navalised, being fitted with the arrester hooks, but retaining the standard non-folding wings. *PX212* flew first on 19th April 1945 and was shown publicly, together with *PX214* at a Press Show at Heston on 2nd October that year. The third, *PX219*, the first fully navalised Hornet, had already commenced carrier trials on the Light Fleet Carrier, H.M.S. *Ocean* on 19th August. A production order was then placed for the Royal Navy's first twin-engined, long-range escort strike fighter, designated the Sea Hornet F. Mk. 20. The first production Sea Hornet, *TT186*, fitted with slotted flaps, first flew at Hatfield on 13th August 1946 and was first shown publicly by Geoffrey Pike at the S.B.A.C. display at Radlett in September. It was later delivered, in October 1946, together with a number of the other early production aircraft for service trials with No. 703 Squadron at R.N.A.S. Lee-on-Solent.

The armament of the Sea Hornet was similar to that of the Hornet, consisting of the four Hispano 20 mm. cannons under the nose, and provision for two 1,000 lb. bombs or eight 60 lb. rockets under the wings. A noticeable external alteration was camera windows built into both sides of the rear fuselage just forward of the roundel. The Sea Hornet F. Mk. 20's, and some of the later N.F. Mk. 21's, were unusual in another respect in that they carried R.A.F. type fin flashes.

Three Hornet F. Mk. 3's of No. 45 Squadron over Malaya during the Emergency. Seen here are WB876 "*O*", WB908 "L" *and* WF959 "*K*". (Photo: Ministry of Defence)



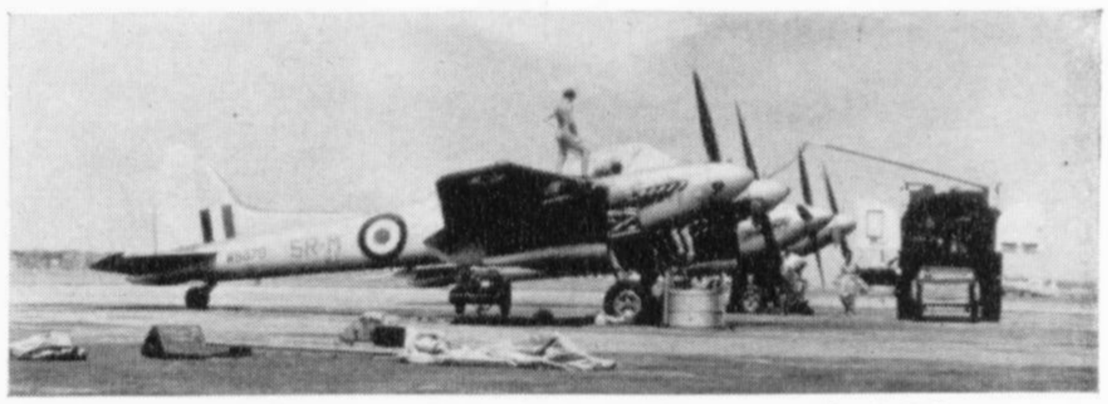
Rocket-firing Hornet F.3's of No. 45 Sqn. prepare to take off from Tengah on one of their daily operations against Malayan terrorists; note variation in presentation of squadron code/identity letters. (Photo: Ministry of Defence)

Further deck trials, with re-designed main undercarriage units fitted, were undertaken on H.M.S. *Illustrious* on 11th October 1948. The first Squadron to be equipped with the Sea Hornet was No. 801 Squadron at Ford which was re-formed on 1st June 1947, having previously operated Seafires until disbandment on 3rd June 1946. It soon left Ford for Arbroath and being the first Sea Hornet Squadron, it was involved in protracted trials and working-up before going to sea in H.M.S. *Implacable* in 1949. This was only a short trial trip, but later in the year it stayed on board for a full commission, transferring to H.M.S. *Indomitable* in 1951 and re-equipping with Sea Furies in June of that year. While on H.M.S. *Indomitable*, the Sea Hornets participated in the giant nine-nation maritime exercise "Castanets" in the rôles of long-range fighter escort and strike. Three Sea Hornet F. Mk. 20's, *TT209*, *VR851* and code *453* were attached to No. 806 Squadron in 1948 to form part of a combined naval group including the first Vampire F. Mk. 20 and two Sea Furies which embarked on the Light Fleet Carrier H.M.C.S. *Magnificent* on 25th May. They completed eight weeks working up training in Canada and then continued to New York where they gave unforgettable flying demonstrations including loops with first one, and then both engines feathered, at the International Air Exposition held between 31st July and 8th August. This tour was marred by one fatal accident when Sea Hornet code *453* crashed into Halifax harbour on 12th June. Sea Hornet *WE247* ended the production of the F. Mk. 20's when it was delivered to the Navy on 12th June 1951, and *WE241* was exhibited at the Fifty Years of Flight celebrations at Hendon the following month. The type was then relegated to second line duties with No. 728 Fleet Requirements Unit at Hal Far until 1955.

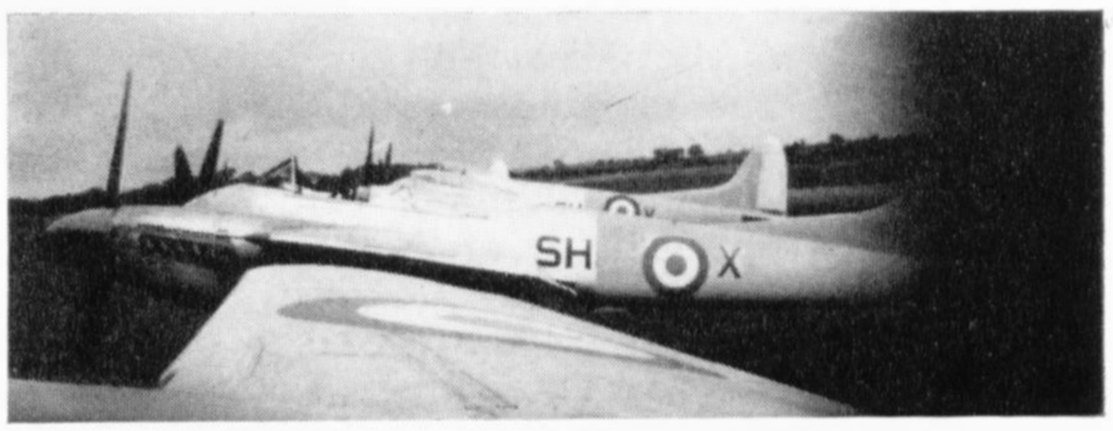
Only one D.H.103 served outside the British Forces and that was Sea Hornet F. Mk. 20, *TT193*, which was acquired on 1st July 1950 by Spartan Air Services, the Ottawa based, Mosquito-equipped survey organisation. *TT193* was an early production Mk. 20 which had flown a total of one hundred and ninety hours in two years with the Fleet Air Arm and the latter part with the R.C.A.F. at Edmonton, Alberta. On 28th June 1951 it was issued with a restricted C. of A. as a three seat civil photographic aircraft, fitted with underwing fuel tanks and the arrester hook removed. It was allocated the registration *CF-GUO*. It was cleared to operate at an increased all-up weight of 18,700 lbs. and was sold the following April to Field Aviation Ltd. Unfortunately its starboard engine exploded on 11th July 1952 while photographing part of British Columbia, though it successfully force landed at Terrace, where it had to be given away due to lack of spares.

THE ALL-WEATHER HORNET

Spec. N.21/45 was issued to cover an urgent requirement for the Navy to have a high performance night fighter. This was met by converting the Sea Hornet F. Mk. 20 into the two-seater radar equipped N.F. Mk. 21, the design responsibility being once again with the Heston Aircraft Co. Ltd., who produced the first trial installation by converting Hornet F.1 *PX230*. This conversion was without the folding wings, but had most of the other naval modifications to be incorporated on the production N.F.21's. The engines were changed to Merlin 133/134's, the

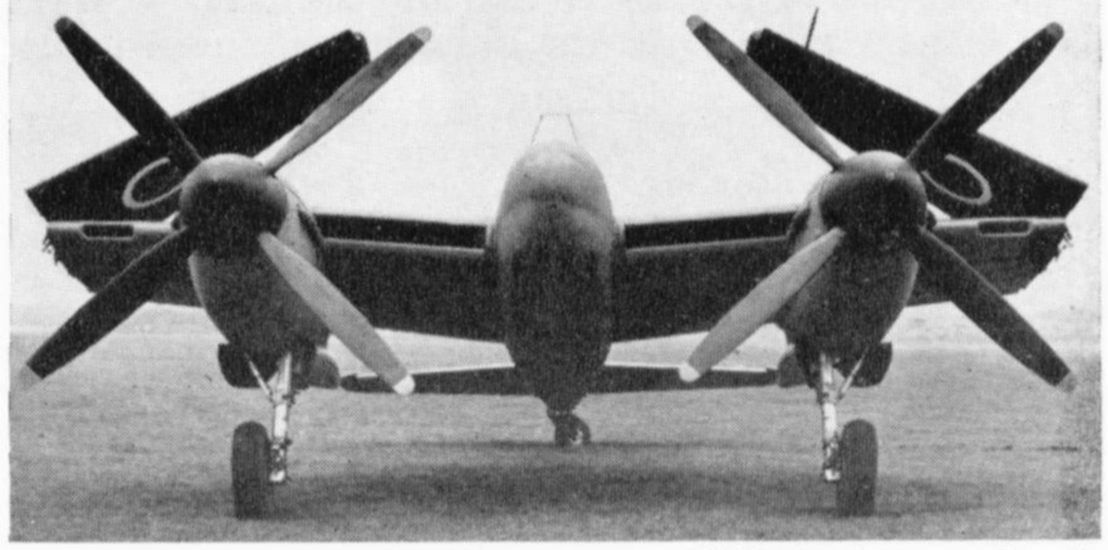


Two Hornets of No. 33 Squadron at Butterworth, Malaya. (Photo: Ministry of Defence)



Hornet F.3's PX392 "*X*" *and* PX358 "*Y*" *of No. 64 Sqn., Linton-on-Ouse, with parts of tail sections distempered yellow for Exercise* Dagger, *1948.* (Photo: P. J. R. Moyes)

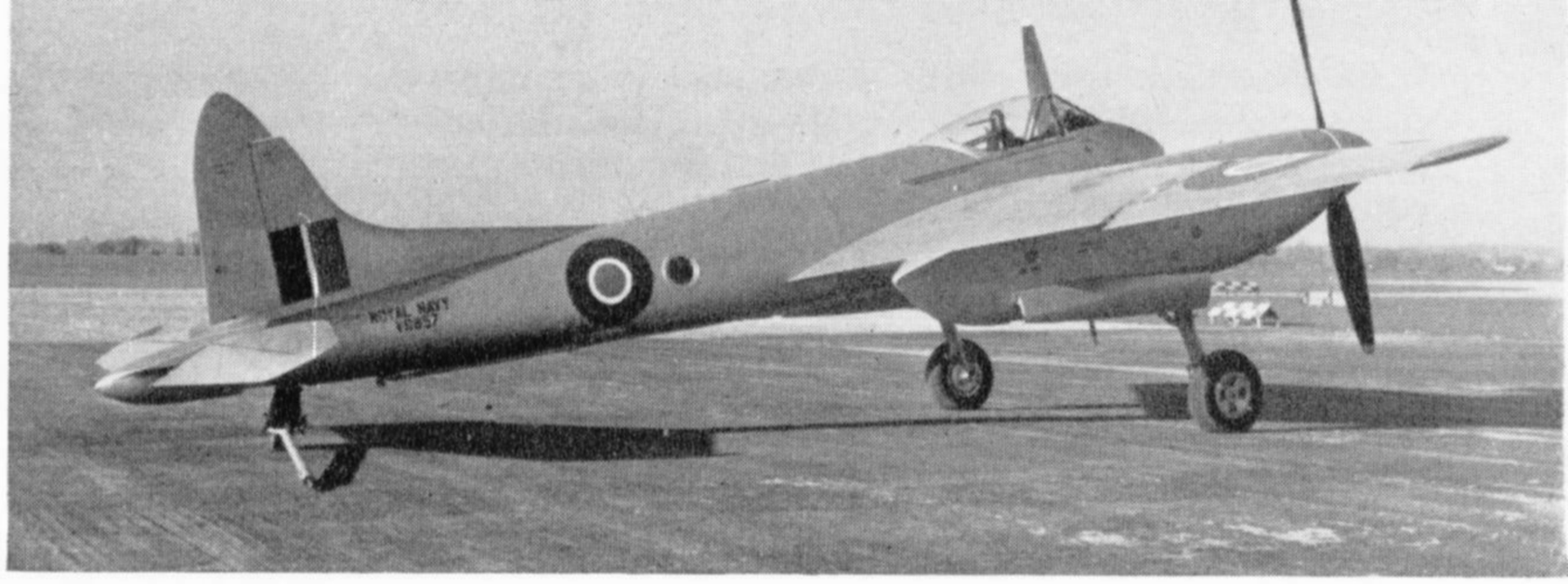
F. Mk. 3 PX362 *of Fighter Command's Hornet Conversion Flight; an ex-65 Sqn. machine, the aircraft still displays the squadron badge on the fin.* (Photo: Ministry of Defence)



The Sea Hornet F. Mk. 20 prototype, PX214, *showing details of the wing leading edge radiators and wing folding geometry.* (Photo: Hawker Siddeley Aviation)

span of the tailplane was increased and a heated radar-operator/navigator's cockpit was installed in the fuselage over the trailing edge of the wing, covered by a one piece canopy. An ASH scanner was installed inside a radome in the nose and large flame-damping exhaust manifolds replaced the original banks of stubs. Various shapes of radome were tried and eventually a thimble radome became standard.

PX230 first flew on 9th July 1946 and was followed by a second prototype, *PX239*. The latter had previously been an F. Mk. 20 converted from an F. Mk. 1 and was equipped with power-operated folding wings and the large dorsal fillet which was fitted retrospectively to all earlier marks. Despite the extra weight and drag resulting from these modifications, the N.F. Mk. 21 was only 5 m.p.h. slower than its predecessor and it made a very useful lead aircraft in a strike formation. The first deck trials



Sea Hornet F. Mk. 20 VR857 *in factory finish at Hatfield.*
(Photo: Hawker Siddeley)

on H.M.S. *Illustrious* on 25th October 1948 proved so successful that the night trials followed almost immediately.

The first of seventy-eight production Sea Hornet N.F. Mk. 21's was *VV430*, built at Hatfield, but towards the end of 1948 the jigs were moved to the Hawarden factory where the remainder of the Sea Hornets were built, starting with *VW951*. The last, *VZ699*, was completed on 3rd November 1950.

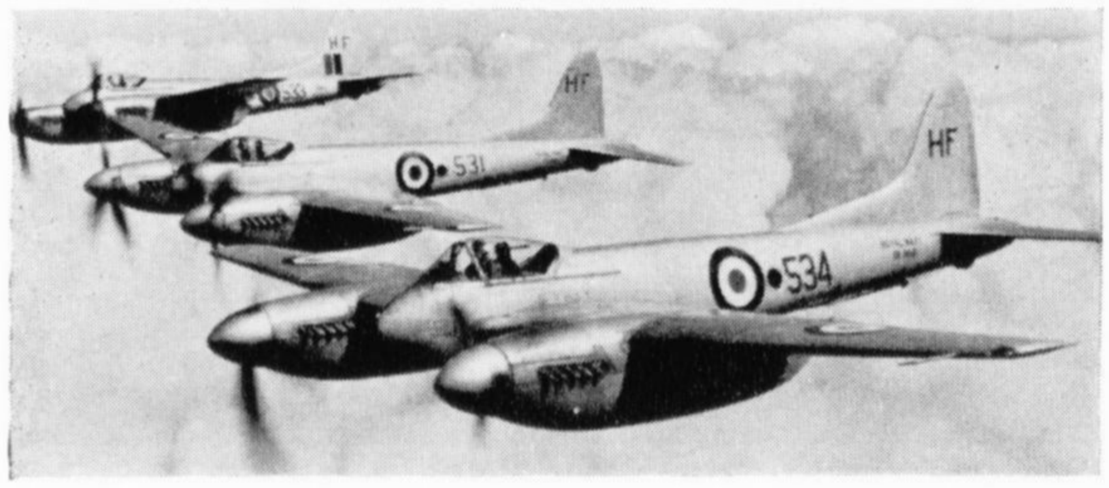
During service test flying of the Sea Hornet N.F. Mk. 21 at Boscombe Down, *PX230* was being flown on 16th May 1947 by Captain Hickson on a stick force per 'G' test when an engine fell off. This was followed by rapid disintegration, the fuselage breaking in two at the empty observer's cockpit. The pilot was left sitting in the single engined front portion, performing "a manoeuvre he had not met before" and quite naturally, as the controls were "without effect", he decided to abandon at the, by now, low level of 400–500 feet. Captain Hickson landed, surrounded by pieces of wreckage, in a growing cornfield, with a cut head. The first witness on the scene was a nearby tractor driver, whose sole concern was that the afore-mentioned events had "b . . . ed up the farmer's best cornfield"!

After prolonged tests with the Naval Air Fighting Development Unit and Service Trials Unit at Ford, eight Sea Hornet N.F. Mk. 21's led by Lt. Cdr. Armour entered service with No. 809 Squadron at R.N.A.S. Culdrose on 20th January 1949. These were referred to as Snow White and the Seven Dwarfs. No. 809 Squadron was the only first-line unit to use the Sea Hornet N.F.21 and had been especially re-formed to operate this type. After a protracted working-up period at Culdrose and a brief deck-landing practice on H.M.S. *Illustrious*, the Squadron embarked on H.M.S. *Vengeance* in May 1951, forming part of the Fleet Air Arm's first All-Weather Air Group. On 16th August 1950, No. 792 Squadron responsible for night fighter training was amalgamated with No. 809 Squadron, increasing the total strength of Sea Hornets to sixteen. The range of the N.F.21 was well demonstrated when the Squadron was at Gibraltar, for F.R.U. work with the Home Fleet, and some of No. 809 Squadron's aircraft were recalled to Lee-on-Solent.

On 16th October 1951, four N.F.21's flew in formation non-stop from Gibraltar to Lee, covering the 1,040 miles in 3 hours, 10 minutes, at an average speed of just under 330 m.p.h. This was improved upon by Lt. D. M. Rouse, R.N., on 24th November when he returned over the same route in a fifth aircraft in only 2 hours 45 minutes at an average speed of 378 m.p.h. With No. 809 Squadron back at Culdrose they commenced an extensive night work-up period before embarking in H.M.S. *Vengeance* in May 1952. It was found that due to difficulties in the operation of these aircraft from Light Fleet Carriers, they had to be disembarked after only twelve days on board. The Squadron then moved to Coltishall in August for a three month work-up period with the Royal Air Force, followed by a move in January 1952 to Hal Far, Malta. No. 809 Squadron finally disbanded in 1954, to be re-equipped with Sea Venoms.

After retirement from front-line service, the Sea Hornet served with No. 736, 738 and 759 Squadrons in a training capacity at Culdrose until 1956 when the majority were broken up at Yeovilton. A number also served with No. 771 Fleet Requirements Unit at Hurn, one of the longest lived of these being *VV430*, the first production N.F. Mk. 21 which was withdrawn from service in October 1955. When it was scrapped in February 1956 it still carried the R.A.F. type fin flash, and another N.F.21 scrapped at the same time was *VZ677*. Some of the last Sea Hornets (examples being F.20's *TT205* and *VR858*, N.F.21 *VW973* and P.R.22 *VZ657*) were parked outside at Abbotsinch in a group with about thirty others. Despite the fact that they were originally cocooned, they suffered badly due to weather which rotted tyres and led to the deterioration of the structure. These derelict aircraft were gradually removed, scrapping being completed by the end of 1957.

The last mark of Hornet produced was the Sea Hornet P.R. Mk. 22 which was similar to the F. Mk. 20 but with the cannon armament removed, and two F.52 cameras installed for day reconnaissance or one Fairchild K.19B for night photography. The prototype was *TT187* and one of the early forty-three production aircraft, *VZ658*, was exhibited at the



In-flight study of three Sea Hornet F. Mk. 20's from No. 728 Fleet Requirements Unit, based on Hal Far, Malta. Aircraft are TT194 "*531*", VR848 "*533*" *and* VR856 "*534*".
(Photo: Royal Navy)

An F. Mk. 20 in its new Fleet Air Arm colour scheme immediately after a catapult launch; note catapult strop falling away.
(Photo: Royal Navy)

S.B.A.C. show at Farnborough in September 1948 equipped with the three vertical cameras. The prototype was later relegated to the training of engineers in patch repairs at R.N.E.C. Manadon. The aircraft was then used for a fire fighting demonstration at a Plymouth air display on 26th June 1954. The fire fighters did such a good job that it was hardly damaged, but it was later broken up by the Civil Defence who used it to practice rescue attempts. This was a poor end to a distinguished aircraft's career, as it appears quite certain that no example of the Hornet or Sea Hornet is now in existence, despite the plan at one time of the de Havilland Aircraft Co. to set up a museum of interesting D.H. aircraft, including the Hornet.

THE HORNET F. Mk. 3 DESCRIBED

The Hornet was a twin-engined single-seat fighter for the Royal Air Force, with a similar version for the Royal Navy, though one Navy mark was fitted with a second seat.

The aircraft was a cantilever mid wing monoplane, the wing section being E.C. 1240 series. The composite two-spar wing made use of the Dr. de Bruyne developed Redux-bonding process as used on the Mosquito. This process was further developed to bond together wood and metal for the first time on the Hornet. The spars consisted of extruded light alloy bottom booms and spruce top booms, joined by compressed plywood webs. The ribs were a composite structure of compressed plywood and alloy sheets. The top skin was of double thickness stressed plywood reinforced by wooden spanwise stringers. The bottom skin was of Alclad, reinforced by extruded duralumin stringers extending from the engines to the wing tips. The leading edge was also of all metal construction. The completed wing was attached to the fuselage by six main bolts.

The fuselage was of an all wood sandwich monocoque structure similar to the Mosquito. It had an oval section tapering towards the tail. It was built in two halves to facilitate construction and equipping before final joining along top and bottom centre lines. False longerons were fitted over widely-spaced bulkheads, the fuselage skin being diagonally laid

Sea Hornet N.F. Mk. 21 prototype PX230 *showing nose "thimble" radome installation.*
(Photo: Hawker Siddeley Aviation)

plywood strips with balsa wood sandwiched in between.

The tail unit was of all metal cantilever construction with metal covering. The fin was an integral part of the fuselage, and the tailplane was two spar construction. The rudder had static balace, the all metal elevators being horn and statically balanced, and fitted with spring balance tabs.

The landing gear was fully retractable with a single wheel on each leg, and a partially retractable single tail wheel. Each main Dunlop wheel was carried on a rubber-in-compression shock-absorber leg on the Hornets, but the Sea Hornets were fitted with Airdraulic shock-absorber legs to withstand the extra loads experienced in deck operation. The hydraulically operated undercarriage retracted rearwards and the pilot was provided with an emergency hand-pump and air system.

The Hornets were powered by a Rolls-Royce Merlin 130 engine in the port nacelle with right hand rotation and a Merlin 131 in the starboard with left hand rotation. They were twelve-cylinder Vee liquid-cooled engines with a maximum combat power output of 2,030 h.p. at 3,000 r.p.m. at 1,250 ft. The radiator air intakes were in the leading edges of the wings between the fuselage and engines. The engines were mounted on steel tube bearers attached to the front spar and turned de Havilland Hydromatic 4/4000/5, four blade, narrow-chord, fully feathering, 12 ft. diameter airscrews. The normal internal fuel capacity was 432 Imperial gallons, which could be supplemented by either two 100-or two 200-Imperial gallon drop tanks.

The pilot's cockpit on both Hornet and Sea Hornet was mounted well forward with an excellent view through the bullet-proof laminated glass front and side windscreens. The moulded perspex canopy opened by sliding rearwards and could be jettisoned in an emergency. The observer's compartment in the Sea Hornet was entered through a hatch under the fuselage,

A night fighter Sea Hornet of No. 809 Squadron, Fleet Air Arm comes to grief during a deck landing; note sections of undercarriage just leaving top left-hand corner of the picture.
(Photo: Royal Navy)

Sea Hornet N.F. Mk. 21 VW947 *"482" of No. 809 Sqn. at Lee-on-Solent in 1953 for the Coronation Review.* (Photo: E. Watts).

situated below the moulded perspex canopy, which could also be jettisoned.

The armament consisted of four forward-firing 20 mm. British Hispano cannons mounted on the underside of the nose. Racks were also provided for two 1,000 lb. bombs or eight 60 lb. rockets under the wings, outboard of the engines. Armour plated bulkheads were provided in front of and behind the pilot.

© *P. J. Birtles, 1967.*

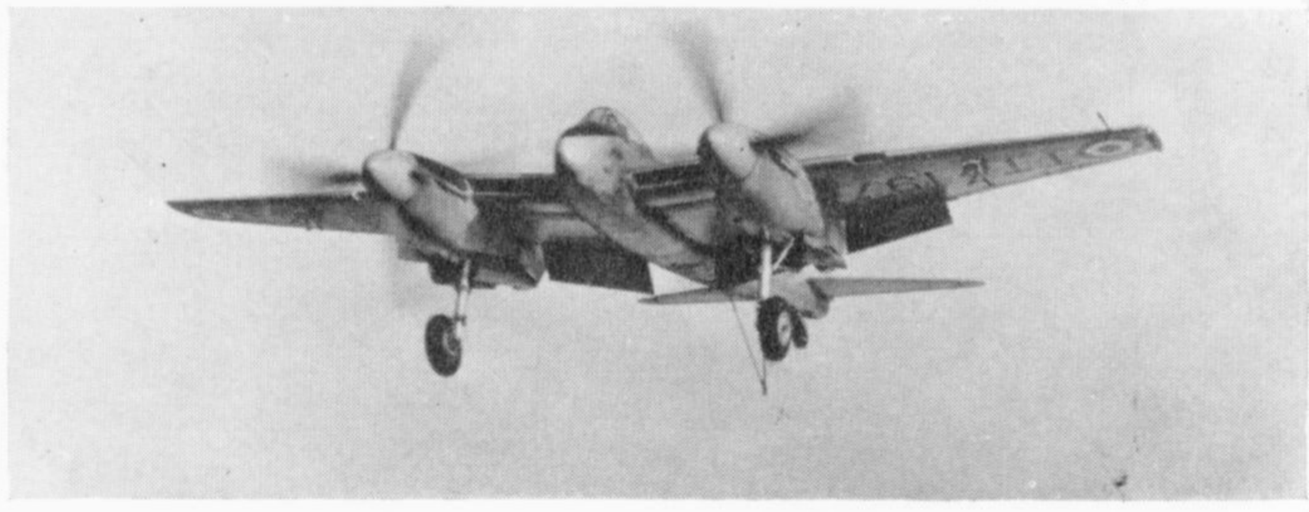
D.H. 103 Hornet Production

Prototypes: *RR915, RR919.*
F. Mk. 1's: *PX210-PX253, PX273-PX288.* 60 a/c. *VB132-VB135, VB154-VB189.* 40 a/c cancelled.
P.R. Mk. 2's: *VA962-VA966.* 5 a/c built and scrapped. *VA967-VA997, VB108-VB131.* 60 a/c cancelled.
F. Mk. 1's and P.R. Mk. 2's mixed: *VB190-VB196, VB213-VB257, VB280-VB299, VB324-VB358, VB379-VB394, VB409-VB436, VB452-VB497, VB525-VB558, VB584-VB596, VB621-VB653, VB682-VB699, VB716-VB748, VB764-VB793, VB808-VB849.* 400 a/c cancelled.
F. Mk. 3's: *PX289-PX315, PX328-PX369, PX383-PX398.* 85 a/c. *PX399-PX425, PX440-PX446.* 34 a/c cancelled. *WB870-WB889, WB897-WB912, WF954-WF962, WF966-WF967.* 47 a/c.
F. Mk. 4's: *WF968-WF979.* 12 a/c. Some F. Mk. 3's converted to F. Mk. 4's.

Service Use of the Hornet

de Havilland Trials: *RR915, PX213, PX224, PX235, PX286, PX287, PX383* (crashed 25/2/49), *PX386.*
A. & A.E.E., Boscombe Down Trials: *RR919, PX210, PX211, PX217-PX223, PX239, PX249, PX312, PX336, PX347, PX348, PX383, PX385, PX386, PX393, PX395, WF954.*
Rolls-Royce Engine Development: *PX288.*
No. 226 O.C.U. Molesworth 1947, Bentwaters 1948. Code 'BB' and later 'XL'.
F. Mk. 1's: *PX238*:D (to Henlow 31/8/49), *PX252*:T (crashed December 1948), *PX275*:V (to 27 M.U. 28/2/49), *PX281*:E.
No. 19 Squadron, re-equipped at Wittering with 1st F. Mk. 1, October 1946, to Church Fenton 1947, F. Mk. 1's replaced by F. Mk. 3's May 1948, re-equipped with Meteor F. Mk. 4's January 1950. Code 'QV'.
F. Mk. 1's: *PX226*:A, *PX233*:K, *PX234*:C, *PX246*:A/M, *PX248*:D, *PX276*:F, *PX277*:B/F, *PX278*:E/K, *PX284*:H.
F. Mk. 3's: *PX293*:A, *PX294*:C, *PX301*:C, *PX306*:G, *PX332*:D, *PX338*:B, *PX342*:E, *PX343*:B, *PX346*:C, *PX347*:D, *PX349*:G, *PX354*:J, *PX363*:B, *PX367*:J, *PX387*:H, *PX389*:A, *PX390*:F.
No. 41 Squadron, Church Fenton 1947-January 1951. Code 'EB'.
F. Mk. 1's: *PX232, PX242*:X/Y, *PX244, PX252, PX277*:W, *PX278.*
F. Mk. 3's: *PX289*:W, *PX294*:E, *PX297, PX298*:V, *PX300*:Y/Z, *PX302*:D, *PX308*:B, *PX314*:C, *PX330*:Y, *PX350*:Z, *PX357*:X, *PX363*:B/Y, *PX366*:A, *PX395*:W/X, *PX307, PX333, PX342, PX397.*
No. 64 Squadron equipped at Horsham St. Faith, March 1946, then at Linton-on-Ouse with F. Mk. 3's in August 1946. Code 'SH'.
F. Mk. 1's: *PX233, PX236*:T, *PX238*:C, *PX241*:N, *PX244*:F, *PX246*:S, *PX247*:Q, *PX248*:D/R, *PX250*:H, *PX251*:M, *PX273, PX274*:G, *PX276*:P, *PX277*:O, *PX279*:A, *PX284*:B, *PX285*:E.
F. Mk. 3's: *PX296*:N, *PX303*:T, *PX340*:W, *PX341*:S, *PX344*:P, *PX346*:M, *PX351*:M, *PX353*:K, *PX358*:Y, *PX364*:U, *PX369*:B, *PX385*:Z, *PX391*:R, *PX392*:X, *PX393*:W, *PX396*:O.
No. 65 Squadron, Linton-on-Ouse, August 1946, equipped with F. Mk. 1's. Received F. Mk. 3's in 1948. Code 'YT'.
F. Mk. 1's: *PX225*:D, *PX226*:S, *PX231*:P, *PX232*:R/X, *PX240*:L, *PX242*:G, *PX252*:H, *PX280*:A, *PX282*:B.
F. Mk. 3's: *PX304*:A, *PX305*:B, *PX328*:D, *PX335*:H, *PX337*:E/F, *PX339*:A, *PX340*:B, *PX345, PX346*:E, *PX348*:M, *PX349*:C, *PX352*:C/J, *PX353*:D, *PX355*:G, *PX361*:A, *PX362*:E/L, *PX388*:F, *PX398*:H.
C.F.E.: *PX217, PX221, PX311.* P.R.D.U.: Benson; *PX216*; 6C-R.
A.F.D.S.: *PX275*:GO-F.
Far East Training Squadron, Seletar 1951—1954. No codes.
F. Mk. 3's: *PX292, PX295, PX313, PX340, WB873, WB879, WB880, WB885, WB888, WB889, WB901, WB905, WF960.*
No. 33 Squadron, Butterworth, North Malaya, 1951—May 1956. Code '5R'.
F. Mk. 3's: *PX289*:Y, *PX293*:V, *PX298*:G, *PX305*:P, *PX306*:J, *PX310*:M, *PX328*:X, *PX335*:A, *PX338*:H, *PX342*:W, *PX346*:Y, *PX365*:P, *PX384*:F, *PX386*:R, *WB870*:M/P, *WB871*:P, *WB872*:S, *WB873*:X, *WB874*:W, *WB875*:R, *WB876*:O, *WB877*:B, *WB878*:D, *WB881*:F, *WB884, WB885*:S, *WB889*:A, *WF957*:H.
F. Mk. 4's: *WF970*:O, *WF971*:J, *WF972*:T, *WF973*:O, *WF975*:C.
No. 45 Squadron, Tengah, Singapore, exchanged its Brigands in 1951 for Hornets and retained them until 1955. Code 'OB'.
F. Mk. 3's: *PX350, PX353, PX354, PX369, PX389, WB883, WB898*:A, *WB905, WB908*:L, *WB911*:B, *WB912*:C, *WF954, WF956*:M, *WF959*:K, *WF961, WF966*:N, *PX310, PX312, PX332, PX335, PX346, PX352, PX362, PX367, WB875*:N, *WB876*:O, *WB879, WF967.*
F. Mk. 4's: *WF973, WF976.*
No. 80 Squadron, Kai Tak, Hong Kong. Hornet F. Mk. 3's replaced Spitfire F. Mk. 24's in Summer 1951 and remained until April 1955. No code.
F. Mk. 3's: *PX297, PX343, PX357, PX390,* WB882:R, *WB888*:L, WB889, WB903:A, WB904:Z, WB906:F, WB907:D, WB909:N, WF958:M, WF962.
F. Mk. 4's: WF974, WF976, WF977:B.

Left: *N.F. Mk. 21* VZ697 *of No. 809 Sqn. split seconds before hooking the arrestor wire.* Right: *Sea Hornet P.R. Mk. 22* TT197 *coming in to land; note deletion of nose armament. Camera windows are just visible under the fuselage centre-section.*
(Photos: Royal Navy)



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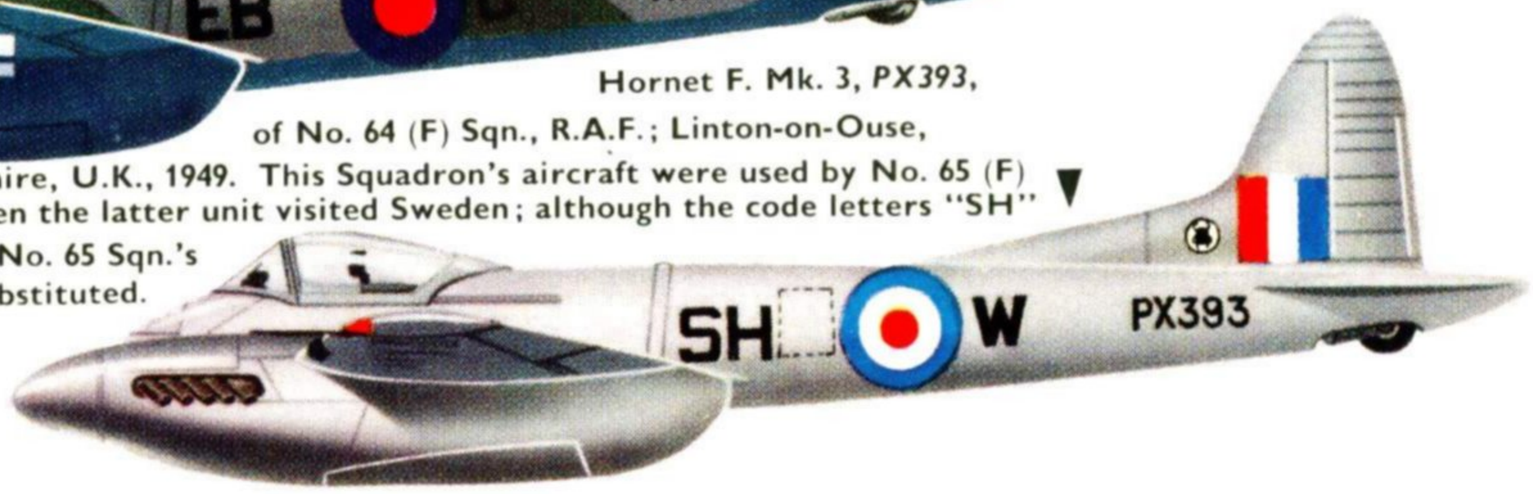
Hornet F. Mk. 3, *PX314*, of No. 41 (F) Squadron, R.A.F., in long-range intruder markings; as at R.A.F. Church Fenton, Yorkshire, U.K., in December 1950.

Fin badge, No. 65 (F) Sqn.

Fin badge, No. 41 (F) Sqn.

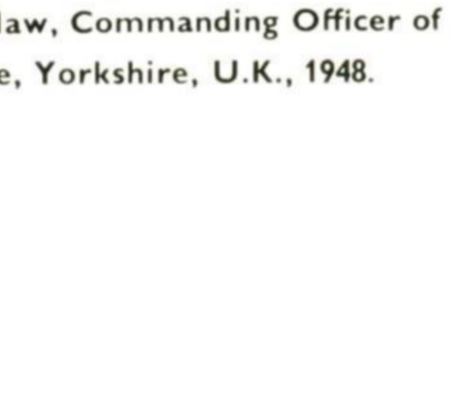
Fin badge, No. 64 (F) Sqn.

Hornet F. Mk. 3, *PX393*, of No. 64 (F) Sqn., R.A.F.; Linton-on-Ouse, Yorkshire, U.K., 1949. This Squadron's aircraft were used by No. 65 (F) Sqn. when the latter unit visited Sweden; although the code letters "SH" were retained, No. 65 Sqn.'s fin badge was substituted.



Sea Hornet N.F. Mk. 21, *VX250*, of No. 809 Sqn., Fleet Air Arm; R.N.A.S. Culdrose, Cornwall, U.K. 1951.

Wing marking of *PX252*.



Hornet F. Mk. 1, *PX252*, flown by Sqn. Ldr. C. Haw, Commanding Officer of No. 65 (F) Sqn., R.A.F.; Linton-on-Ouse, Yorkshire, U.K., 1948.

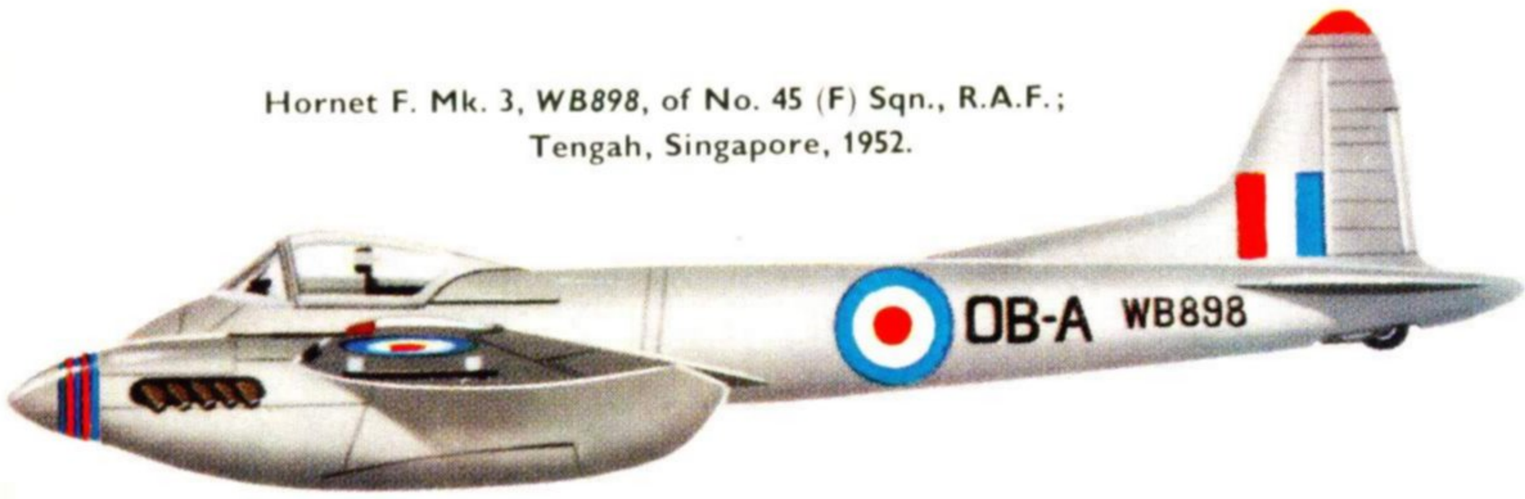
Hornet F. Mk. 1, *PX284*, of No. 19 (F) Sqn., R.A.F.; Church Fenton, Yorkshire, U.K., 1948.

Sea Hornet F. Mk. 20, *TT206*, of Air Fighting Development Unit; R.N.A.S. Ford, Sussex, U.K., c. 1949.

Hornet F. Mk. 3, *PX332*, of No. 19 (F) Sqn., R.A.F.; Church Fenton, Yorkshire, U.K., 1950. This view illustrates right-hand side camouflage pattern of long-range day intruder markings; No. 41 (F) Sqn. similar.

Hornet F. Mk. 4, *WF977*, of No. 80 (F) Sqn., R.A.F.; Kai Tak, Hong Kong, 1953.

Hornet F. Mk. 3, *WB898*, of No. 45 (F) Sqn., R.A.F.; Tengah, Singapore, 1952.



The rather grotesque nose radome cannot disguise the Hornet's beautiful lines; even so encumbered, it looks what it was—the fastest, highest performance piston-engined fighter ever to fly with the world's air forces. This view shows VV430, *the first production Sea Hornet N.F. Mk. 21.* (Photo: Hawker Siddeley Aviation)

D.H. 103 Sea Hornet Production

F. Mk. 20 Prototypes: *PX212*, *PX214*, *PX219*, *PX239*.
F. Mk. 20: *TT186-TT213*, *TT247-TT248*, *VR836-VR864*, *VR891-VR893*, *VZ707-VZ715*, *WE235-WE242*. 79 a/c.
N.F. Mk. 21 Prototypes: *PX230*, *PX239*.
N.F. Mk. 21: *VV430-VV441*, *VW945-VW980*, *VX245-VX252*, *VZ671-VZ682*, *VZ690-VZ699*. 78 a/c.
P.R. Mk. 22 Prototype: *TT187*.
P.R. Mk. 22: *VW930-VW939*, *VZ655-VZ664*, *WE245-WE247*. 23 a/c.

Service Use of the Sea Hornet

de Havilland Trials: *TT189*, *TT190*, *TT202* (and R.A.E. Farnborough).
A. & A.E.E. Boscombe Down Trials: *TT186-TT188*, *TT190-TT191*, *TT205*, *TT248*, *VV430*, *VW930*, *VW959*, *PX219*, *PX230*, *PX239*.
No. 703 Squadron, Lee-on-Solent, Service trials from October 1946.
F. Mk. 20: *TT186*.
No. 801 Squadron, formed 1/7/47 at Ford; to Arbroath; H.M.S. *Implacable* 1949; H.M.S. *Indomitable* 1951 until re-equipment in June.
F. Mk. 20's: (silver painted) *TT196*:450C, *TT200*, *TT201*, *TT203*, *TT204*:154FD, *TT205*, *TT206*:151FD, *TT207*, *TT208*, *TT209*:457C, *TT211*:158FD, *TT212*, *VR837-VR840*, *VR845*:452C, *VR847*, *VR850*, *VR851*:450C, *VR852*, *VR853*:451A, *VR854*, *VR855*, *VR857*, *VR859*, *VR860*, *VR862*, *VZ708*:456C, *VR891*:160 (painted in dark sea grey/duck egg green).
No. 806 Squadron, H.M.C.S. *Magnificent* 25/5/48 to Dartmouth, Nova Scotia by 1/6/48. Floyd Bennett Field, U.S.A., Malton, Ontario and Ottawa. Disbanded September 1948.
F. Mk. 20's: *TT209*:457C, *VR851*:450C, *Unknown*:453 (crashed 12/6/48 in Halifax Harbour). Ex No. 801 Squadron aircraft.
No. 809 Squadron, formed Culdrose 20/1/49, H.M.S. *Vengeance* May 1951, Culdrose November 1951, H.M.S. *Vengeance* May 1952, Coltishall August 1952, Hal Far January 1952 until 1954.
N.F. Mk. 21's: (painted dark sea grey/duck egg green) *VV434*:487J, *VV437*:484CW, *VV440*:486J, *VW945*, *VW946*:481J, *VW947*:482J, *VW949*:485CW, *VW952*, *VW953*:484J, *VW954*:487J, *VW955*:483J, *VW956*:488Q, *VW957*, *VW958*:485J, *VW959*:489J, *VW960*:483A, *VW961*:488J, *VW968*, *VW970*:480, *VX250*:486Q, *VZ677*:483Q, *VZ680*, *VZ682*, *VZ697*, *VV432*, *VV435*, *VV438*, *VV439*, *VV441*, *VW948*, *VW963*, *VW969*, *VZ672*, *VZ673*.
No. 728 Fleet Requirements Unit, Hal Far, Malta 1953-1955.
F. Mk. 20's: *TT194*, *TT197*:531HF, *VR848*:533HF, *VR854*:532HF, *VR856*:534HF, *WE238*:530HF.
No. 771 Fleet Requirements Unit, Hurn, January 1953—October 1955
F. Mk. 20's: *TT196*, *TT212*, *TT213*, *VR840*, *VR843*, *VR864*, *VZ711*, *WE239*.
N.F. Mk. 21's: *VV430*, *VV432*, *VV433*, *VV435*, *VV436*, *VW949*, *VW950*, *VW966*, *VW969*, *VW979*, *VZ676*, *VZ677*, *VZ682*, *VZ691*.
No. 738 Squadron Culdrose from August 1950—February 1952 as part of 52nd Training Air Group.
P.R. Mk. 22's: *TT197*, *VW931*, *VW932*, *VW936*, *VW939*, *VZ664*.
F. Mk. 20's: *TT191*, *TT203*, *TT210*, *VR837*, *VR858*.
No. 736 Squadron Culdrose, 52nd Training Air Group.
P.R. Mk. 22: *VZ664*.
No. 759 Squadron Culdrose, 52nd Training Air Group.
F. Mk. 20's: *TT191*, *VZ712*.
P.R. Mk. 22's: *VW932*, *VZ664*.
Aircraft Holding Unit, Lossiemouth Aerobatic Team, October 1953.
F. Mk. 20's: *TT186*, *VR850*, *WE240*, *WE241*.

DATA ON ALL MARKS
(manufactured by the de Havilland Aircraft Company at Hatfield, Hertfordshire and Hawarden, Chester.)

Mark	F. Mk. 1	P.R. Mk. 2	F. Mk. 3	F. Mk. 4	F. Mk. 20	N.F. Mk. 21	P.R. Mk. 22
Specification	F.12/43	—	—	—	N.5/44	N.21/45	—
Span	45 ft.	45 ft.	45 ft.	45 ft.	45 ft.	45 ft.	45 ft.
Length (tail down) ...	36 ft. 8 in.	36 ft. 8 in.	36 ft. 8 in.	36 ft. 8 in.	36 ft. 8 in.	37 ft.	36 ft. 8 in.
Height (tail down) ...	14 ft. 2 in.	14 ft. 2 in.	14 ft. 2 in.	14 ft. 2 in.	14 ft. 2 in.	14 ft.	14 ft. 2 in.
Wing Area	361 sq. ft.	361 sq. ft.	361 sq. ft.	361 sq. ft.	361 sq. ft.	361 sq. ft.	361 sq. ft.
Maximum all-up weight ...	16,100 lbs.	15,900 lbs.	20,900 lbs.	20,000 lbs.	18,250 lbs.	19,530 lbs.	18,230 lbs.
Maximum speed	472 m.p.h.	472 m.p.h.	472 m.p.h.	472 m.p.h.	467 m.p.h.	462 m.p.h.	467 m.p.h.
Operational Ceiling ...	37,500 ft.	37,500 ft.	35,000 ft.	35,000 ft.	35,000 ft.	36,500 ft.	37,500 ft.
Maximum range with full pay-load	2,500 miles	2,500 miles	3,000 miles	3,000 miles	2,500 miles	1,500 miles	3,000 miles
Total internal fuel... ...	360 I.galls.	360 I.galls.	432 I.galls.	418 I.galls.	360 I.galls.	360 I.galls.	419 I.galls.

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